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COMMISSION

U.S. DEPARTMENT OF

March 17, 1997

AILEEN A. PISCOTTA

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Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Re: Notice of Ex Parte Presentation in IB Docket No. 96-220

Dear Mr. Caton:

On behalf of Final Analysis Inc. ("Final Analysis"), an original and one copy of this letter are being filed to notify the Commission, pursuant to Section 1.1206 of the Commission's rules, that Final Analysis participated in a meeting with Commission staff concerning issues in the above-referenced proceeding. International Bureau staff present included Harold Ng, Engineering Advisor to the Bureau Chief, Thomas S. Tycz, Chief of the Satellite Division; Cassandra Thomas, Deputy Chief of the Satellite Division, and Paula H. Ford and Julie Garcia, both of the Satellite Division. Representatives of CTA Commercial Systems, Inc. and E-SAT, Inc., both parties to the above referenced proceeding, also were present.

A copy of the presentation material discussed at the meeting is attached. Copies of this notice are also being hand delivered to the staff Commission staff listed above.

Please direct any questions regarding this matter to me.

Respectfully submitted,


Aileen A. Pisciotta
Counsel for Final Analysis, Inc.

Encl.

cc: Ruth Milkman

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Majority Supported Solution to

NPRM

Introduction

- ◆ NPRM Systems
- ◆ Proposed Systems A & B
- ◆ Proposed Systems X & Y
- ◆ Conclusion and Summary

NPRM

137.0-138.0 MHz Downlink Band

NOAA METSAT
EUMETSAT (from 2002)

TEL2

STARSYS

E-SAT

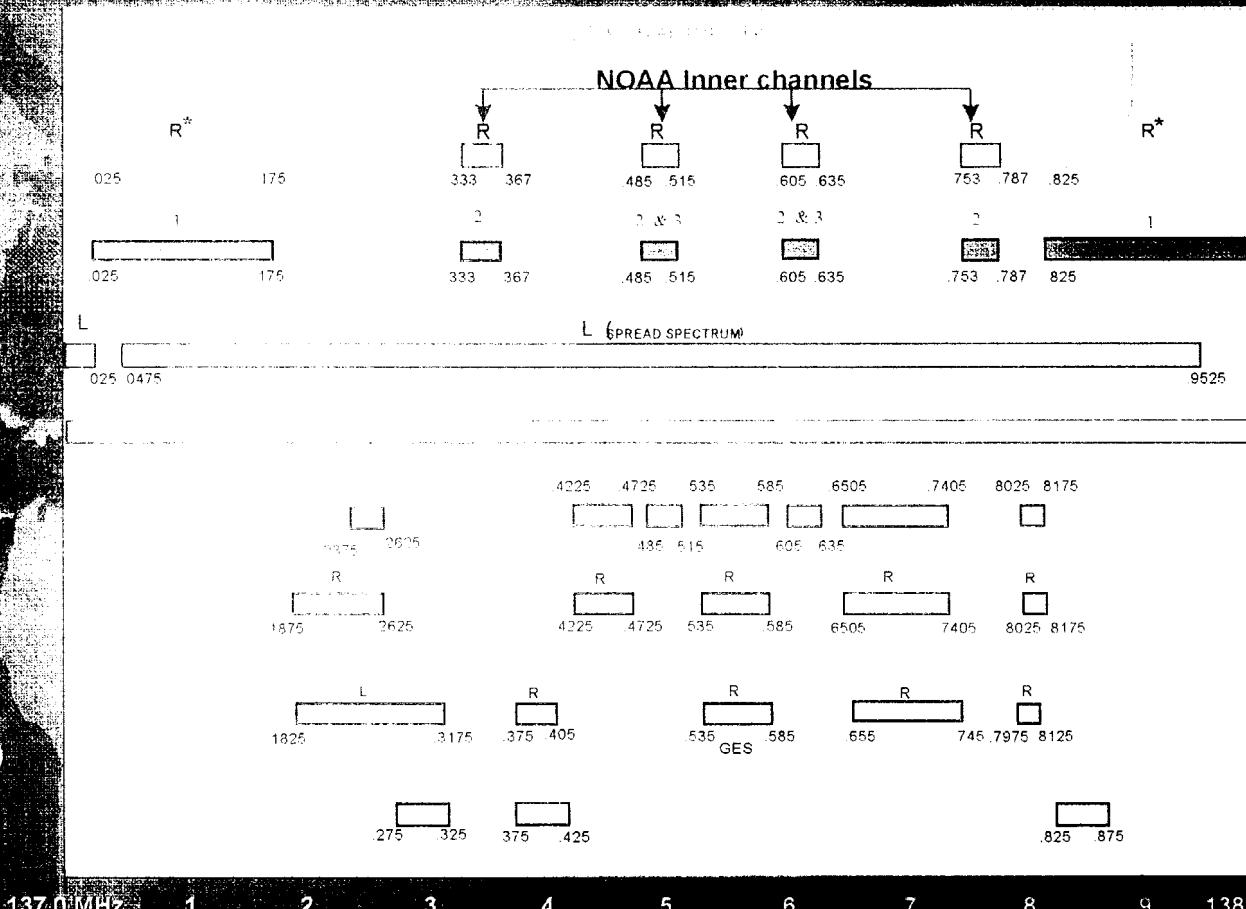
ORBCOMM
(from 2003)

ORBCOMM
(MODIFIED)

ORBCOMM
(LICENSED)

METEOR

R: RHCP
L: LHCP



* Effective 2003, NOAA will begin using the outer bands (one satellite in 2003, and second satellite in 2007) and Orbcomm will have to migrate its channels from 0.185-0.2375 to two of NOAA's channels.

1. These bands can be used primary until 2002, time share with NOAA afterwards.

2. These channels can be used as secondary until January 2000, co-primary afterwards.

3. Orbcomm might not need to migrate operation into these channels when NOAA begins operation in the 137.025-137.175 Subband, if successful with coordination.

NPRM

400-401 MHz Downlink Band

DIVSP

R

400.150

400.505

R

400.645

R

401.0

L1C

R

400.150

R

400.505

R

400.645

R

401.0

L1C

R

505

R

5517

R

5517

VITA

R

505

R

5517

STARsys

R

5983

R

5983

ORBCOMM

R

075

R

125

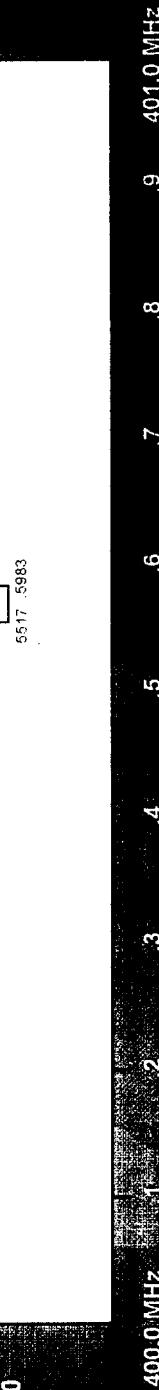
S80

R

5317

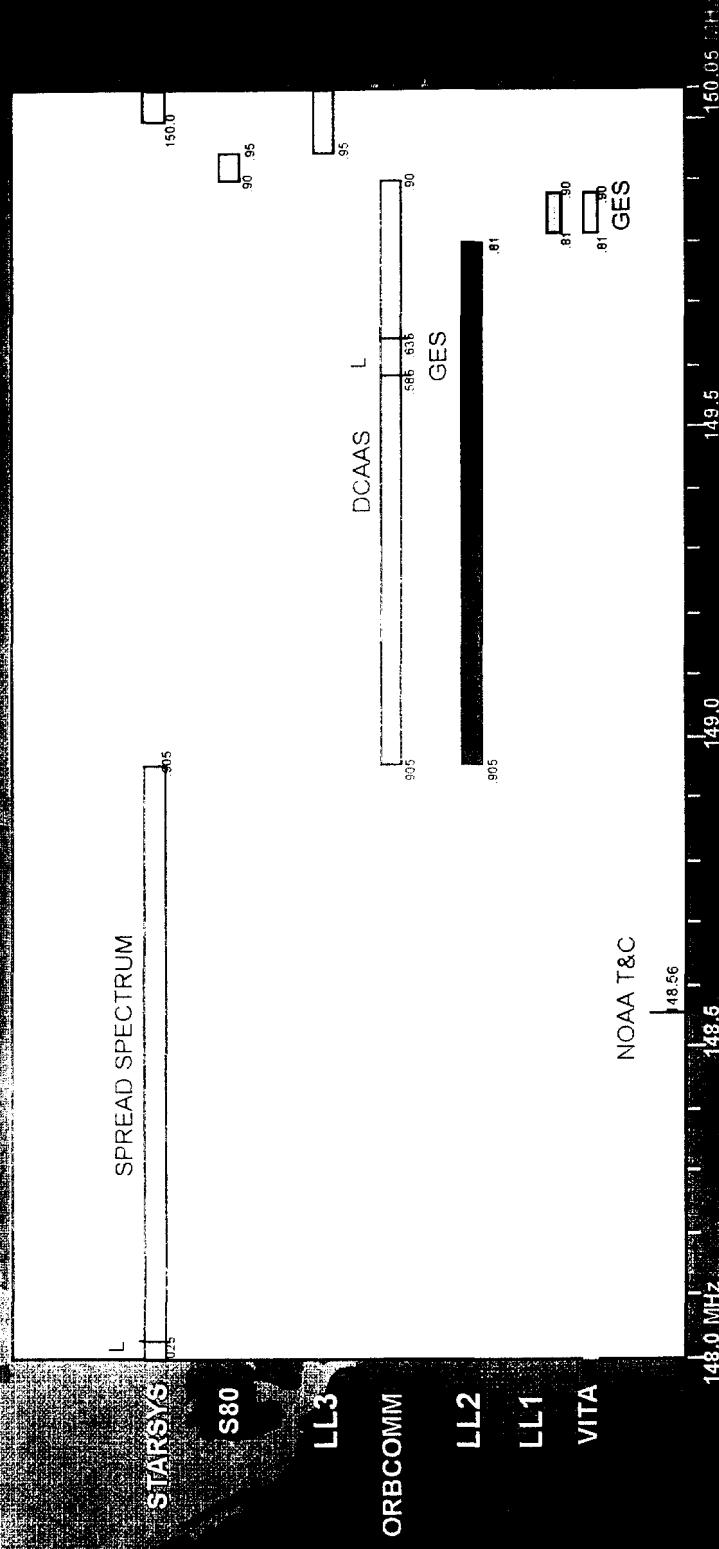
R

.5983



NPRM

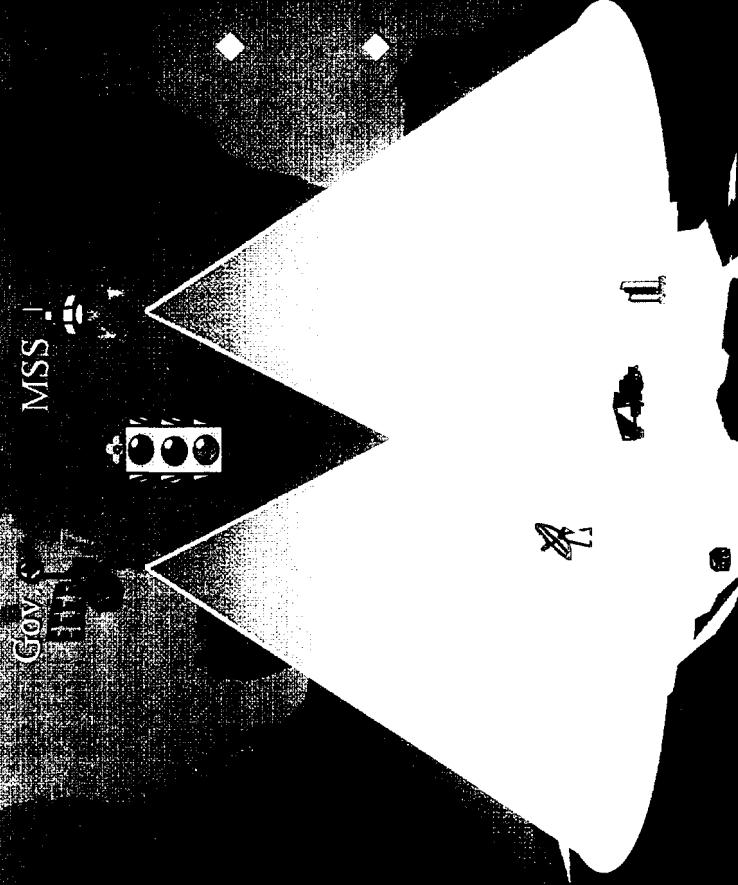
148.0 - 150.05 MHz Uplink Band



Time Sharing

- ◆ Little LEO can Operate in the Government Band as Long as its Foot Print Does not Overlap with Government Satellite's
- ◆ If Little LEO Foot Print Overlaps with Government Satellite's, It Must Either Stop Transmission or Switch to a Different Frequency

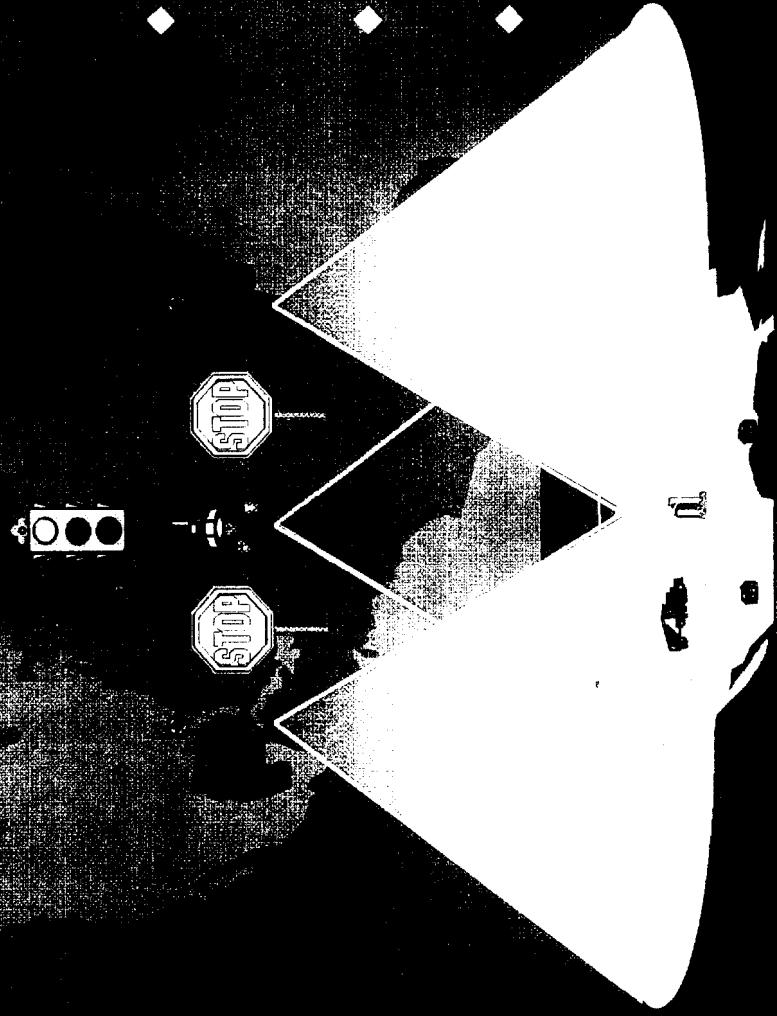
Use of Multi-Receive User Terminals One Government Satellite in View



- ◆ Terminals Must be able to Receive at least Two different Frequencies
- ◆ Additional Requirements and Complexity will Increase Terminal Cost

Use of Multi-Receive User Terminal Two Government Satellites in View

- ◆ There is no available Frequency for the MSS to which to Hop
- ◆ Even a Multi-receive User Terminal will not Work
- ◆ This will Cause as Much as 32% Coverage Outage



Systems A&B

- System A Downlink: Entire available spectrum in the 400-401 MHz band
- System B Downlink: Entire available spectrum in the 137-138 MHz band

	Coverage	Outage	Downlink Capacity
System A:	68%	32%	90%
System B:	68%	32%	92%

1 LEO-ONE USA Comments Dated 12/20/96, Appendix E, pg 16

2 Outage% = 100 - Coverage%

3 LEO-ONE USA Comments, Dated 12/20/96 Appendix B pg 3

System A Downlink

Both Service and Feeder Link Operations in 400-401 MHz Band

- ◆ Time Shared with DMSP

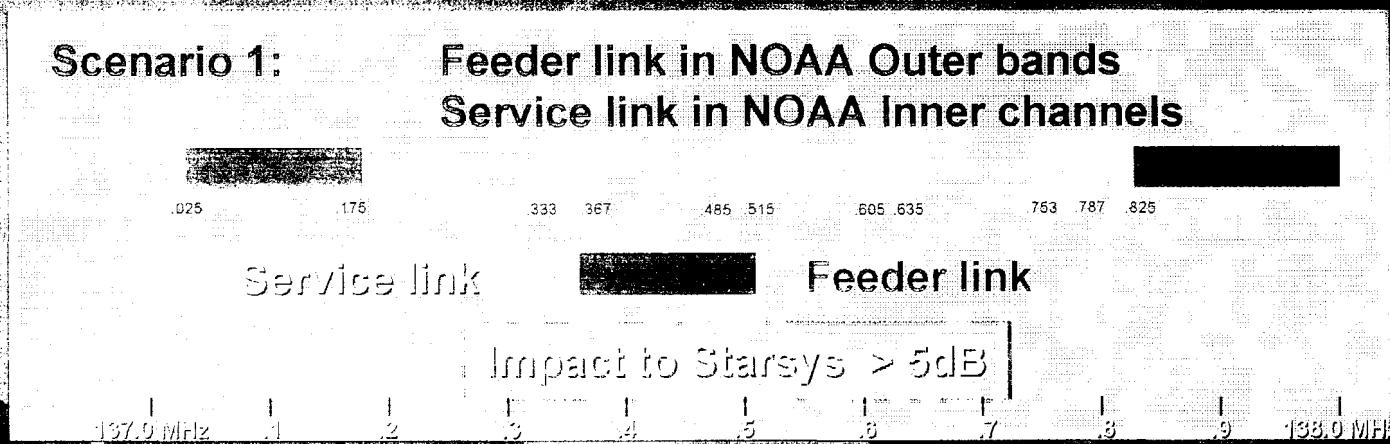
- ◆ Time Shared with VITA

System B DownLink

Both Service and Feeder link Operations in 137-138 MHz Band

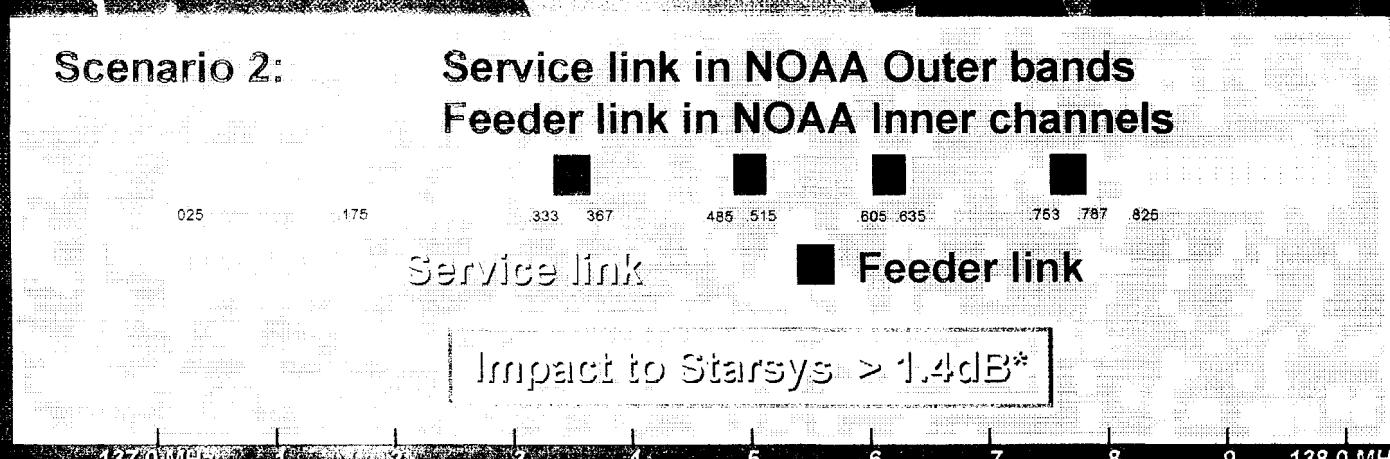
Scenario 1:

Feeder link in NOAA Outer bands
Service link in NOAA Inner channels



Scenario 2:

Service link in NOAA Outer bands
Feeder link in NOAA Inner channels



Starsys Margin 0.7 dB

System B, Scenario 2, can coordinate with Starsys by reducing its Transmission power while in the Starsys main beam

Concerns with A

Severe Impact on Starsys

- Imposes unnecessary degradation to Starsys
- Requires power reduction in system B operation

Time Sharing With NOAA and Coordination With Starsys and Other Users of the Band Will Place System B at Significant Disadvantage

- ◆ Unbalanced Uplink-Downlink Throughput for System A
 - ITU Studies Support more Uplink Requirement than Downlink
- ◆ More Than One Applicant Desires to Operate in the Proposed System A Downlink

X/Y Band Share

February 21 Proposal

- ◆ Provided General Concept for Sharing Both Bands Without Specificity
- ◆ Provided Fungible Systems
- ◆ Was the First Step Towards an Industry Solution

X/Y Band Sharing

- ◆ Accommodates All Second Round Applicants
 - Allows E-Sat to Operate CDMA Technique
 - Provides CTA Adequate Spectrum to Implement its System
 - Provides two Fungible Systems for Final Analysis and
 - LEO One
 - ◆ Reduces Impact to Starsys
 - ◆ Provides Possible Expansion Scenario for Orbcomm

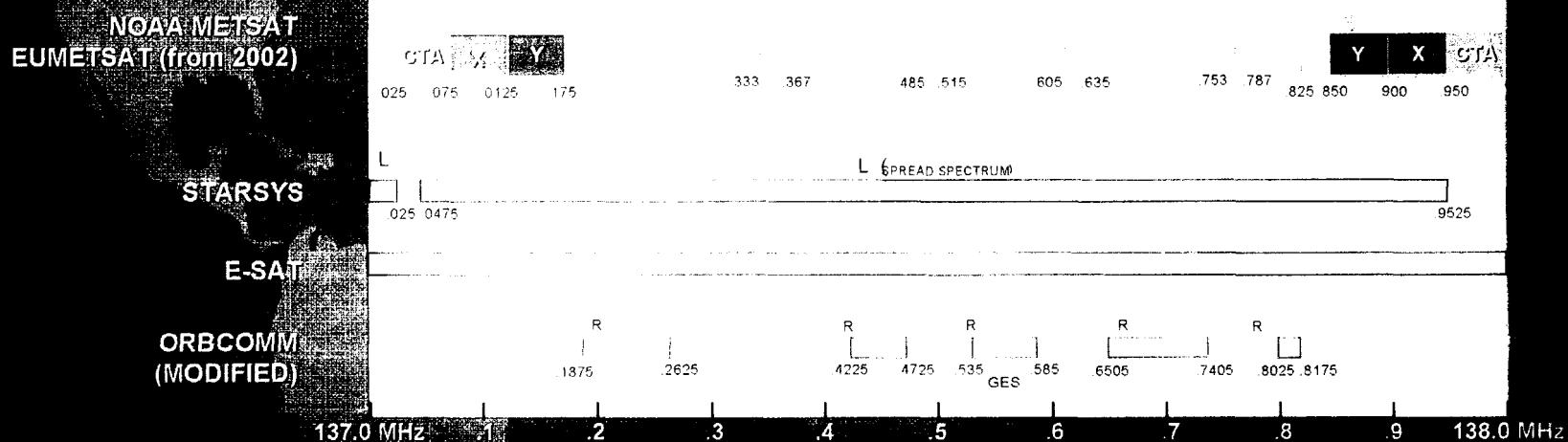
X/Y Band Sharing

Details of 137.0-138.0 MHz Downlink Band

- ◆ Systems X and Y can Utilize this Allocation for Only Feeder Link Operation
 - Systems X and Y will utilize 50 kHz each on both sides of NOAA outer bands
 - Systems X and Y can also utilize NOAA inner channels for additional feeder links
- ◆ CTA Can Utilize its Allocation in NOAA's Outer bands for both Service and Feeder Link Operations: 137.025-137.075 & 137.950-138.0

X/Y Band Sharing

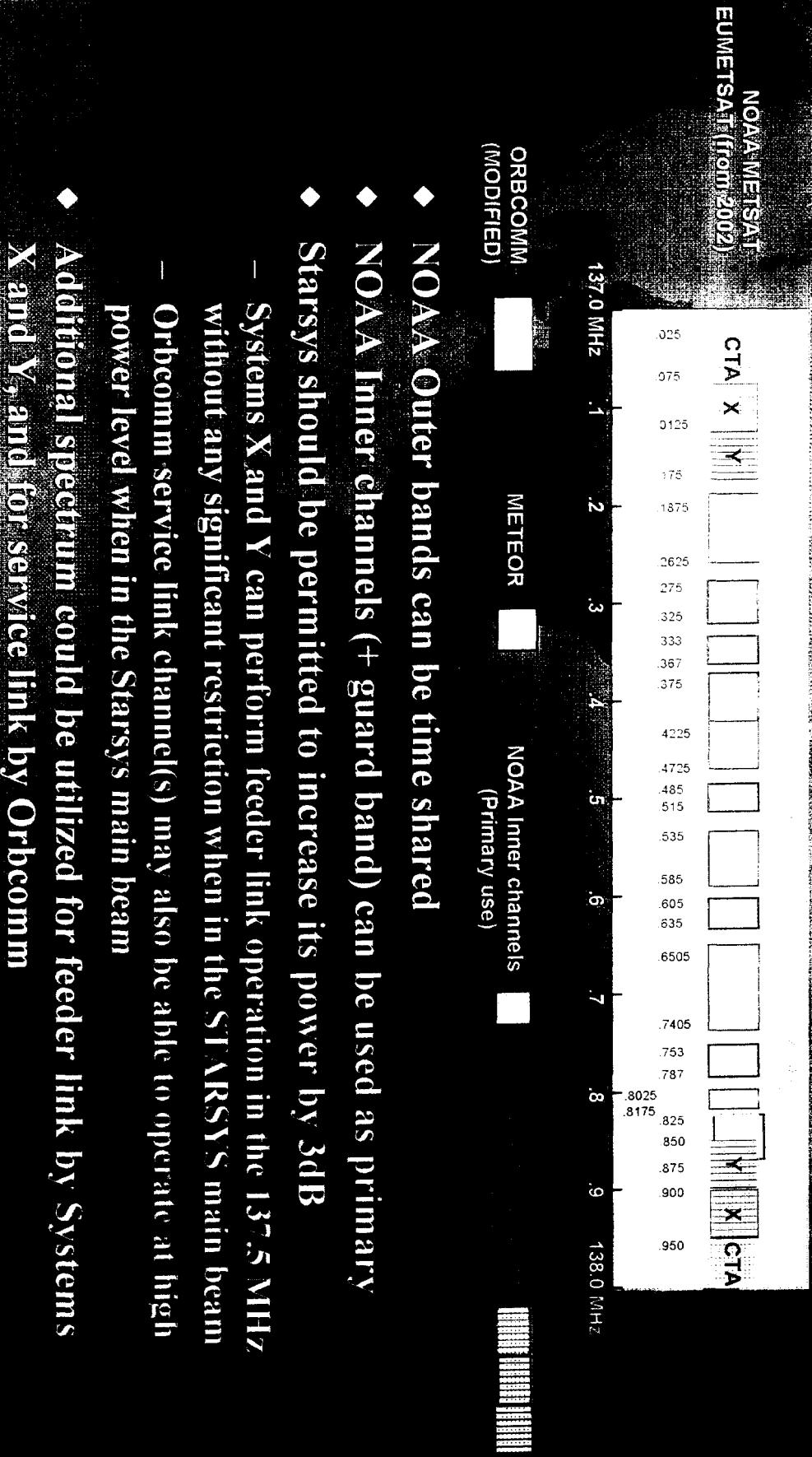
Before NOAA's Migration into Outer Bands



Total Impact to STAR SYS
STAR SYS Margin

X/Y Band Share

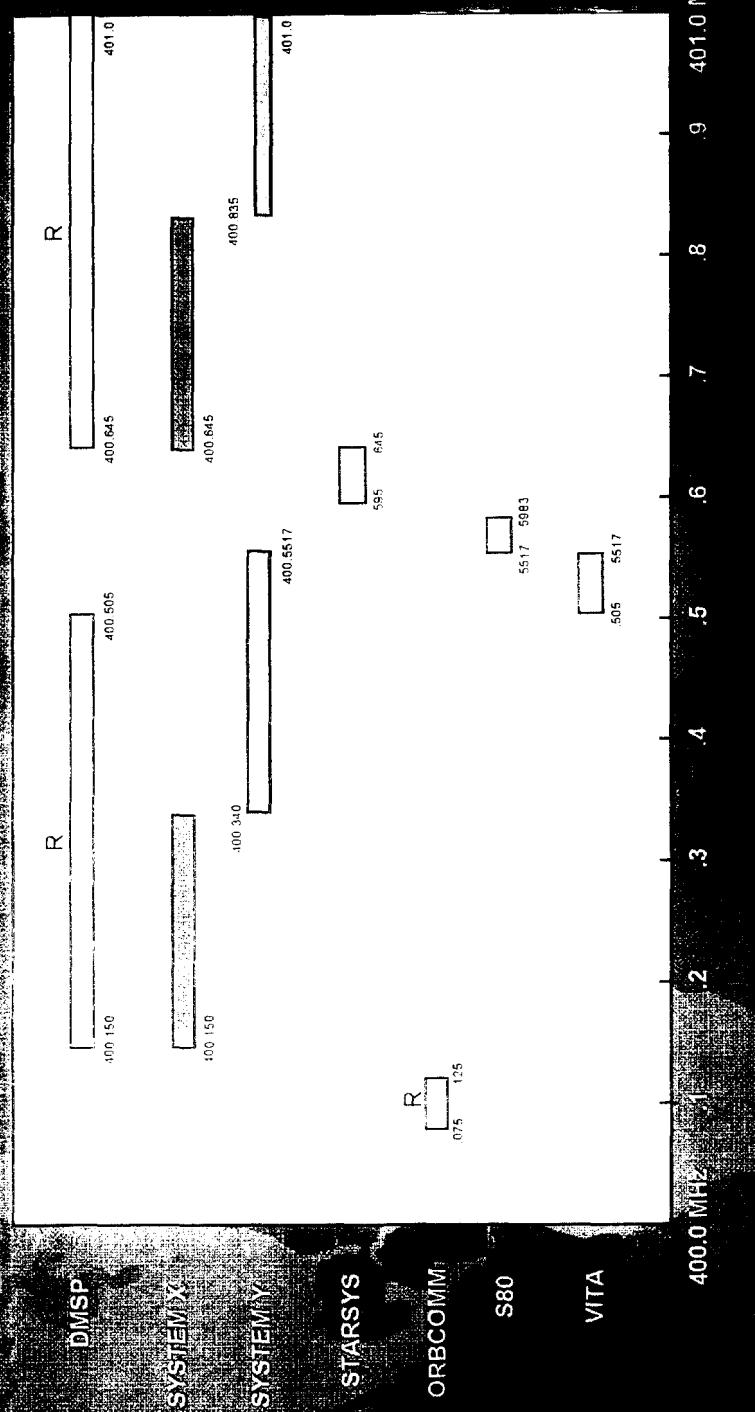
After NOAA's Departure from Inner Channels



- ◆ NOAA Outer bands can be time shared
- ◆ NOAA Inner channels (+ guard band) can be used as primary
- ◆ Starsys should be permitted to increase its power by 3dB
 - Systems X and Y can perform feeder link operation in the 137.5 MHz without any significant restriction when in the STARSYS main beam
 - Orbcomm service link channel(s) may also be able to operate at high power level when in the Starsys main beam
- ◆ Additional spectrum could be utilized for feeder link by Systems X and Y, and for service link by Orbcomm

X/Y Band Sharing

400-401 MHz Downlink Band



- ◆ Provides two Fungible Downlink Bands for Service links and Additional Feeder links
- ◆ Provides more Balanced Uplink-Downlink Throughput

X/Y Band Sharing

148.0-150.05 MHz UPLINK BAND

- ◆ Feeder Links:
 - CTA: 149.950-149.975 MHz
 - X: 149.975-150.0125 MHz
 - Y: 150.0125-150.050 MHz
- ◆ Service Links:
 - CTA, X, & Y: 148.905-149.90 MHz
- ◆ Comments:
 - Allocation of 455-456 and 459-460 MHz bands would reduce congestion in the 148-150 MHz band
 - Allocation of S80-1 (50 kHz) for uplink feeder link in the U.S. would enable Starsys to move its ground station operation and therefore reduce potential interference to E-Sat

Conclusion

- ◆ X/Y Band Sharing Plan Provides Less Interference to Starsys and Other Users of 137-138 MHz Band
- ◆ Use of Feeder Links Only for Two Large Systems Minimizes NOAA Coordination
- ◆ Potential Spectrum Warehousing Will Be Reduced
 - If one operator does not meet its milestones, the other operator(s) can utilize the unused spectrum

Summary

Two Solutions

- ◆ A/B Plan
 - CTA and Final Analysis Would Share System A
 - LEO One Would Be Assigned to System B
 - Significant Coordination Would Be Required With 137MHz Band Users
- ◆ X/Y Plan
 - Supported by Majority
 - Provides an Industry Solution
 - Minimizes Impact to the Existing Licensees